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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/613,068	07/07/2003	Takeshi Tsubouchi	033528-018	8545

7590 03/13/2006
BURNS, DOANE, SWECKER & MATHIS, L.L.P.
P.O. Box 1404
Alexandria, VA 22313-1404

EXAMINER

DWIVEDI, VIKANSHA S

ART UNIT	PAPER NUMBER
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3746

DATE MAILED: 03/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

JP

Office Action Summary	Application No.	Applicant(s)	
	10/613,068	TSUBOUCHI ET AL.	
	Examiner	Art Unit	
	Vikansha S. Dwivedi	3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 2 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☒ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-15 is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>12/04/2003</u> . | 6) <input type="checkbox"/> Other: _____ |

Information Disclosure Statement

Applicant Information Disclosure Statement submitted on December 4, 2003 is acknowledged. Since the submission complies 37CFR 1.97 and 1.98 the references listed therein have been considered.

Quayle Action

This application is in condition for allowance except for the following formal matters:

Specification

Abstract

The abstract of the disclosure is objected to undue length. The abstract should be within the range of 50 to 150 words. Correction is required. See MPEP § 608.01(b).

Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

Allowable Subject Matter

Claims 1—15 are allowed.

The following is an examiner's statement of reasons for allowance: The prior art neither discloses nor makes obvious the combination set forth in the claims by not disclosing the following features: A centrifugal fluid pump apparatus comprising of a position sensor for detecting a position of said impeller; and hydrodynamic bearing means provided on an inner surface of said housing at a side of said rotor or on a surface of said impeller at a side of said rotor, said control mechanism comprising: a position sensor output monitoring function or an electromagnet current monitoring function; a motor current monitoring function; a failure detection function for determining a failure of the sensor by using said position sensor output monitoring function or a failure of the electromagnet by using said electromagnet current monitoring function; and an emergency impeller rotation function operating when said failure detection function detects the failure of the sensor or the failure of the electromagnet to rotate said impeller by utilizing said hydrodynamic bearing means without substantial contact between said impeller and said housing, wherein said emergency impeller rotation function has: rotation termination function of terminating power to the motor and the electromagnet when the failure detection function detects a failure to thereby terminate rotation of the rotor and the impeller; impeller magnetic counterforce application function

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to apply a current to the electromagnet sufficient to overcome the magnetic coupling force of the rotor to the impeller caused by the magnet; hydrodynamic levitation control detection function of detecting hydraulic bearing coupling and thereby magnetic rotational coupling of the impeller and the rotor under hydraulic bearing conditions by using a motor current monitored by the motor current monitoring function; motor speed control function for increasing the motor speed and hence the impeller rotation speed up to a predetermined value after the hydrodynamic levitation control detection function detects that the hydraulic bearing coupling between the impeller and the rotor has been made; and impeller magnetic counterforce termination function to terminate current to the electromagnet once the predetermined impeller rotation speed is reached.

The closest prior art is a European patent Application (Application number 00402119.2) that discloses a centrifugal pump assembly with a centrifugal fluid pump (summary of invention, Column 2 line 22) that comprises of a pump body with an impeller that rotates without contacting the housing of the impeller (Summary of invention, Column 2 line 24-29). The said pump body has a inlet port (22) and an outlet port (23). The impeller has a first magnetic material (25) and a second magnetic material (28) and rotates in the said housing to feed fluid by centrifugal force generated during rotation (Column 2, line 29-31); an impeller rotational torque generation section including a rotor having a magnet for attracting said first magnetic material of said impeller and a motor for rotating said rotor; an impeller position control section having an electromagnet for attracting said second magnetic material of said impeller (Column 2, lines 32-37).

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Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vikansha S. Dwivedi whose telephone number is 571-272-7834. The examiner can normally be reached on M-F, 8-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy S. Thorpe can be reached on 571-272-4444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

VSD


TAE JUN KIM
PRIMARY EXAMINER